

WHAT IS CLAIMED IS:

1. A ladder filter comprising series arm resonators and parallel arm resonators; wherein

the series arm resonators and the parallel arm resonators are alternately connected to each other;

each of the series arm resonators is a first series arm resonator connected in parallel to an inductor or a second series arm resonator not connected to an inductor; and

a relationship of $fsr1 < fsr2$ is satisfied, where $fsr1$ represents the resonant frequency of the first series arm resonator and $fsr2$ represents the resonant frequency of the second series arm resonator.

2. A ladder filter according to Claim 1, wherein a relationship of $fsr1 < fpa < fsr2$ is satisfied, where fpa represents the anti-resonant frequency of the parallel arm resonators.

3. A ladder filter according to Claim 1, wherein a relationship of $fsa2 < fsa1'$ is satisfied, where $fsa1'$ represents the anti-resonant frequency of the first series arm resonator, the anti-resonant frequency of the first series arm resonator is shifted by the operation of the inductor, which is connected in parallel with the first series arm resonator, and $fsa2$ represents the anti-resonant frequency of the second series arm resonator.

4. A ladder filter according to Claim 1, wherein a relationship of $fpa \times 0.995 < (fsr1 + fsr2)/2 < fpa \times 1.01$ is satisfied, where fpa represents the anti-resonant frequency of the parallel resonators.

5. A ladder filter according to Claim 1, wherein the resonant frequency of the first series arm resonator is different from the resonant frequency of the second series arm resonator.

6. A ladder filter according to Claim 1, further comprising a package, wherein the inductor connected in parallel to the first series arm resonator is arranged in the package.

7. A ladder filter according to Claim 1, wherein the resonator is a one-terminal pair surface acoustic wave resonator including a piezoelectric substrate and a plurality of interdigital electrodes transducers arranged on the piezoelectric substrate.

8. A ladder filter according to Claim 1, wherein the resonator is a piezoelectric thin-film resonator including a substrate provided with one of an opening and a recess and a vibrating portion defined by a piezoelectric thin film including at least one layer and arranged above the opening or the recess that is sandwiched by at least a pair of electrodes.

9. A branching filter comprising the ladder filter as set forth in Claim 1.

10. A communication apparatus including the ladder filter as set forth in Claim 1.

11. A communication apparatus including the branching filter as set forth in Claim 9.